CLAIMS OF APPLN. NO. 10/662,372 AS AMENDED 7/10/2007

1. (Currently amended) A combustion method that reduces the amount of NOx emitted, comprising:

(A) providing a combustion device;

(B) feeding primary air and fuel into said device through a burner that comprises means for feeding secondary air into said combustion device and optionally comprises means for feeding tertiary air into said combustion device;

(C) separating air outside the combustion device into a gas stream consisting of oxygen-rich gas and a gas stream consisting of nitrogen-rich gas;

(D) combusting said fuel in a flame, while feeding at least a portion of said gas stream consisting of oxygen-rich gas into said flame,

(E) and feeding a gas stream consisting of nitrogen-rich gas which is at least a portion of said gas stream consisting of nitrogen-rich gas obtained in step (C) into ~~said means for feeding primary air into said combustion device, into~~ said means for feeding secondary air into said combustion device ~~, or into the interior of said combustion device from between where said fuel emerges into from the burner and where secondary and tertiary air emerge from said burner~~.

2. (Previously presented) A method according to claim 1 wherein at least a portion of said gas stream consisting of nitrogen-rich gas that is fed into said combustion device in step (E) is fed into said combustion device through one or both of said means for supplying secondary air and said means for supplying tertiary air.

3. (Previously presented) A method according to claim 1 wherein step (E) comprises feeding 10 vol.% to 100 vol.% of the gas stream consisting of nitrogen-rich gas obtained in step (C) into said combustion device.

4. (Previously presented) A method according to claim 1 wherein step (E) comprises feeding 50 vol.% to 100 vol.% of the gas stream consisting of nitrogen-rich gas obtained in step (C) into said combustion device.

5. (Previously presented) A method according to claim 1 wherein up to 25 vol.% of the stoichiometric amount of oxygen required for combustion of said fuel is supplied by said gas stream consisting of oxygen-rich gas.

6. (Previously presented) A method according to claim 1 wherein said gas stream consisting of nitrogen-rich gas that is fed into said combustion device in step (E) is heated before it is fed through said burner by indirect heat exchange with flue gas produced in said combustion device by said combustion.

7. (Previously presented) A method according to claim 1 wherein a portion of flue gas produced in said combustion device by said combustion is fed with said gas stream consisting of nitrogen-rich gas that is fed into said combustion device in step (E).

8. (Previously presented) A method according to claim 1 wherein a spray of liquid water is fed with said gas stream consisting of nitrogen-rich gas that is fed into said combustion device in step (E).

9. (Previously presented) A method according to claim 1 further comprising injecting at least a portion of said gas stream consisting of nitrogen-rich gas that is obtained in step (C) into said primary air that is fed into said device in step (A).

10. (Currently amended) A combustion method that reduces the amount of NOx emitted comprising:

(A) providing a combustion device that has a primary combustion zone and a burn out zone;

(B) feeding air and fuel through a burner into said primary combustion zone;

(C) separating air outside the combustion device into a gas stream consisting of oxygen-rich gas and a gas stream consisting of nitrogen-rich gas;

(D) combusting the fuel in a flame in the primary combustion zone, while
feeding a gas stream consisting of oxygen-rich gas which is at least a portion of said gas stream consisting of oxygen-rich gas that is obtained in step (C) into said primary combustion zone,

(E) adding air from a source other than said burner into said burn out zone in an amount containing sufficient oxygen that the total amount of oxygen fed into said device is at least the stoichiometric amount needed for complete

combustion of said fuel, and combusting residual combustibles from said primary combustion zone in said burn out zone,

(F) and feeding a gas stream consisting of nitrogen-rich gas which is at least a portion of said gas stream consisting of nitrogen-rich gas obtained in step (C) into ~~said means for feeding primary air into said combustion device, into~~ said means for feeding secondary air into said combustion device, ~~into the interior of said combustion device from between where said fuel emerges into from the burner and where secondary and tertiary air emerge from said burner,~~ or into said burn out zone.

11. (Previously presented) A method according to claim 10 further comprising feeding at least a portion of said gas stream consisting of nitrogen-rich gas obtained in step (C) into said burn out zone.

12. (Previously presented) A method according to claim 10 wherein step (E) comprises feeding 10 vol.% to 100 vol.% of said gas stream consisting of nitrogen-rich gas obtained in step (C) into said burn out zone.

13. (Previously presented) A method according to claim 10 wherein step (E) comprises feeding 50 vol.% to 100 vol.% of said gas stream consisting of nitrogen-rich gas obtained in step (C) into said burn out zone.

14. (Previously presented) A method according to claim 10 wherein up to 25 vol.% of the stoichiometric amount of oxygen required for combustion of said fuel is

supplied by said gas stream consisting of oxygen-rich gas obtained in step (C).

15. (Previously presented) A method according to claim 10 wherein said gas stream consisting of nitrogen-rich gas that is fed into said combustion device in step (E) is heated before it is fed to said burn out zone by indirect heat exchange with flue gas produced in said combustion device by said combustion.

16. (Previously presented) A method according to claim 10 wherein a portion of flue gas produced in said combustion device by said combustion is fed with said gas stream consisting of nitrogen-rich gas that is fed into said combustion device in step (E).

17. (Previously presented) A method according to claim 10 wherein a spray of liquid water is fed with said gas stream consisting of nitrogen-rich gas that is fed into said combustion device in step (E).

18. (Previously presented) A method according to claim 10 wherein the gas stream consisting of nitrogen-rich gas that is fed in step (E) is fed at a velocity sufficient to promote mixing of said air fed in step (E) and residual combustibles from the primary combustion zone in said burn out zone.

19. (Original) A method according to claim 10 further comprising injecting into or downstream of said

burn out zone a reducing reagent that reacts with NOx to form N_2 and thereby lessens the amount of NOx that would otherwise be emitted from said furnace.

20. (Previously presented) A method according to claim 10 further comprising injecting at least a portion of said gas stream consisting of nitrogen-rich gas that is obtained in step (C) into said air that is fed into said device in step (A).

21. (Canceled)